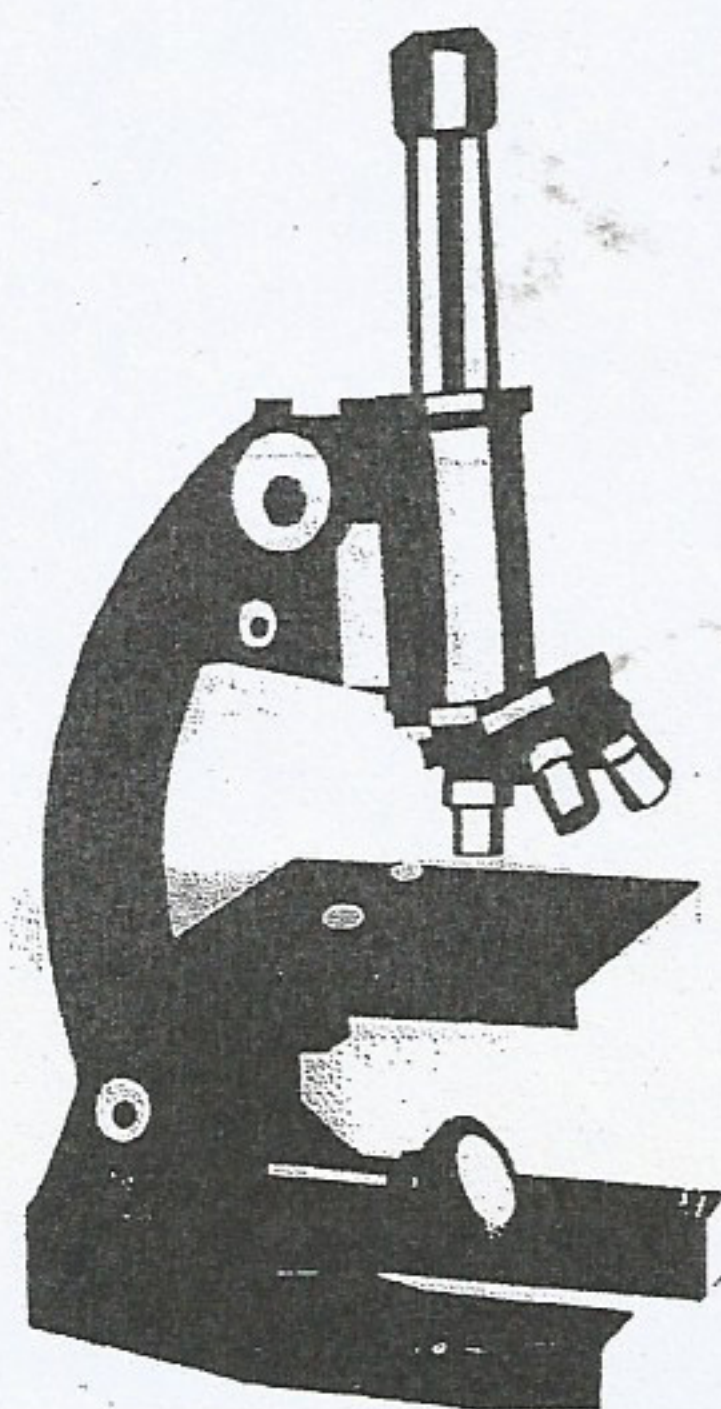


# HISTOLOGY PRACTICAL GUIDE BOOK

## HISTOLOGY I LABORATORY SLIDES

### BASIC BODY TISSUE HISTOLOGY



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مركز الاوائل للخدمات الطلابية



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## Practice 1: Microscope

A

### PARTS OF THE LIGHT MICROSCOPE

**A. EYEPIECE**  
Contains the **OCULAR** lens

**B. NOSEPIECE**  
Holds the **HIGH-** and **LOW-** power objective **LENSES**; can be rotated to change **MAGNIFICATION**.

**C. OBJECTIVE LENSES**  
Magnification ranges from **10 X** to **40 X**

**D. STAGE CLIPS**  
**HOLD** the slide in place

**E. STAGE**  
Supports the **SLIDE** being viewed

**F. LIGHT SOURCE**  
Projects light **UPWARDS** through the diaphragm, the **SPECIMEN**, and the **LENSES**

**K. ARM**  
Used to **SUPPORT** the microscope when carried

**J. COARSE ADJUSTMENT KNOB**  
Moves the stage up and down for **FOCUSING**

**I. FINE ADJUSTMENT KNOB**  
Moves the stage slightly to **SHARPEN** the image

**H. DIAPHRAGM**  
Regulates the amount of **LIGHT** on the specimen

**G. BASE**  
Supports the **MICROSCOPE**

Condenser lens:  
collect & focus  
light that shines  
up through the  
slide

Microscope Is An Instrument That Produces An Enlarged Image Of An Object. Histologist Use Microscopes To Study Things That Are Too Small To Be Seen With Unaided Eye.

Basic Parts Of A Compound Light Microscope:

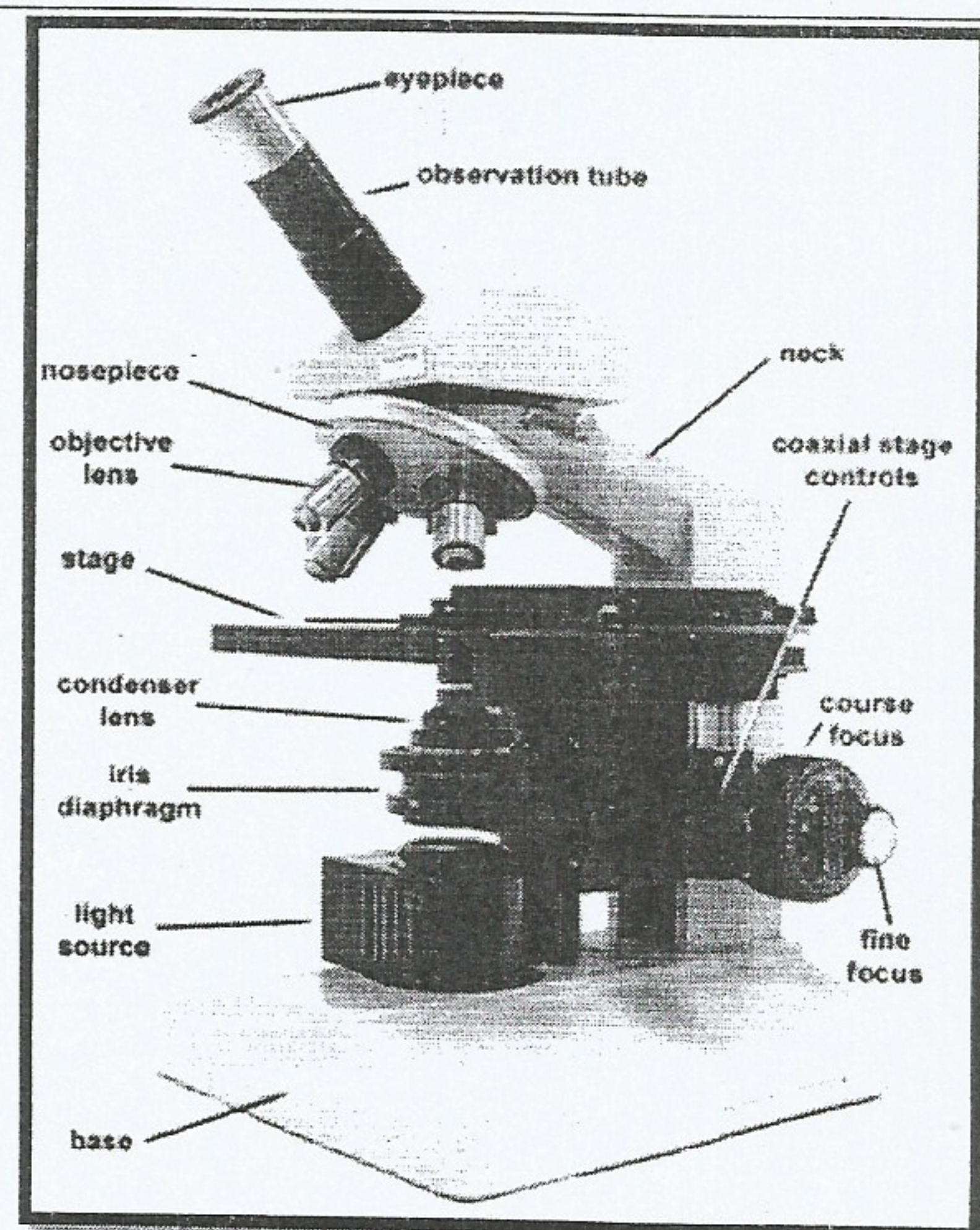
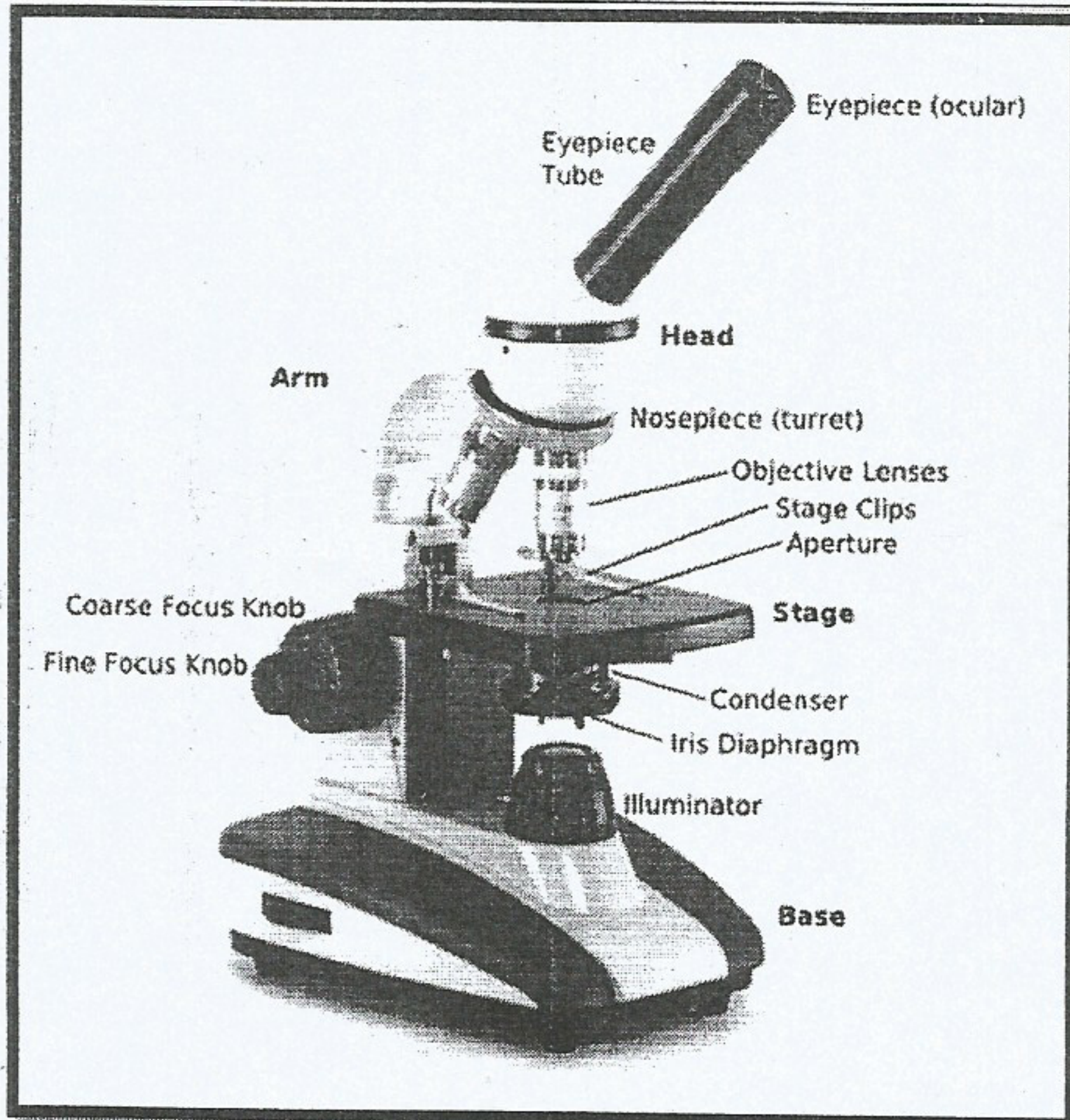
#### 1-Optical Parts:

- **Eyepiece (Ocular) Lens:** Usually Contains A 10X Lens.
- **Objective Lens:** Basically A Housing For A Lens. Our Microscopes Have Three Objective Lenses - 4X, 10X, 40X & 100X (Oil Immersion Lens)
- **Condenser Lens:** Located Under The Stage Collect & Focus The Light That Shines Up Through The Slide. Often In Conjunction With An Iris Diaphragm.
- **Diaphragm Or Iris:** Located Under The Stage And Above The Condenser, It Is An Apparatus That Can Controls The Amount Of Light Reaching The Slide.
- **Filter**
- **Light Source:** Located Directly Under The Stage (Mirror, Electrical Lamp)



## 2-Mechanical Parts:

- **Arm:** Contains The Housing For The Fine And Coarse Adjustments And Connects The Base Of The Microscope To The Nosepiece And Ocular.
- **Base:**
- **Revolving Nosepiece:** A Rotating Head That Has The Objective Lenses Attached To It. The Lens To Be Used Should "Click" Into Position When The Wheel Is Gently Turned So That It Is Directly Over The Specimen Slide.
- **Stage:** Rectangle Stage, The Specimen Slides Rests On This Part Of The Microscope.
- **Clip**
- **Coarse Adjustment Knobs:** The Larger Of Two Sets Of Knobs Located On Either Side Of The Arm, Just Above The Base. This Adjustment Is Used To Make Large Adjustments In Focusing By Moving The Lenses Up And Down. *Never Use This Adjustment When Using The 40X Objective.*
- **Fine Adjustment Knobs:** The Smaller Of Two Sets Of Knobs Located On Either Side Of The Arm. This Adjustment Is Used To Make Small Adjustments In Focusing. It Has A Limited Amount Of Movement And Is Most Efficiently Used After Focusing With The 4X Objective And Coarse Focus, Then Increasing Magnification And Making Final Adjustments With The Fine Focus Knob.
- **Condenser Focus Knob:** Moves Condenser Up & Down To Control The Lighting Focus On The Specimen. Roak Or Pinion





## **Practice 2: Cytology I**

### **Cell Organelles & Inclusions**

**Slide Of Chicken Blood (Nucleated RBC)**

- 1-Cell Cytoplasm**
- 2- Nucleus**

**A:Slide Organ: Spinal Ganglion**

- 1-Golgi Apparatus**

**B: Slide Organ: Spinal Cord(Neuron)**

- 1- Nissl Bodies**

**C: Slide Organ: Eye (Retina)**

- 1-Pigment Layer**

## **Practice 3: Cytology II**

### **Cell Nucleus & Cell Mitosis**

**Slide Organ: Liver**

- 1-Euchromatin Nucleus**
- 2-Heterochromatin Nucleus**

**Organ : Onion Root( Cell Mitosis)**

- 1-Interphase**
- 2-Prophase**
- 3-Metaphase**
- 4-Anaphase**
- 5-Telophase**



## Practice 4: Epithelial Tissue I

### Membranous Epithelium

- Simple Epithelium

**Slide Organ: Kidney (Cortex)**

**1-Simple Squamous Epith. (Partial Layer Of Bowmans Capsule)**

**2-Simple Cuboidal Epithelium (Ducts Of Kidney)**

**Slide Organ: Small Intestine**

(<sup>①</sup> Simple <sup>②</sup> Columnar <sup>⑦</sup> Epithelium With Brush Border And <sup>③</sup> Goblet <sup>④</sup> Cells)

**1- Simple Columnar Epith.**

**2-Brush Border**

**3-Goblet Cells**

**4-Lamina Propria**

**(Pseudo-Stratified Columnar Ciliated Epithelium With Goblet Cells)**

**Slide Organ: Trachea**

**1-Pseudostratified Columnar**

**2-Ciliated Epithelium**

**3-Goblet Cell**

**4-Lamina Propria**



## Cont. Practice 4: Membranous Epithelium

### • Stratified Epithelium

**Slide Organ: Esophagus**

**Stratified Squamous Epithelial Non Keratinized**

**1-Basal Columnar Cell Layer**

**2-Middle Cuboidal Cell Layer**

**3-Superficial Squamous Layer**

**Slide Organ: Skin**

**Stratified Squamous Epith. Keratinized**

**1-Basal Columnar Cell Layer**

**2-Middle Cuboidal Cell Layer**

**3-Superficial Squamous Layer**

**4-Keratin**

**Transitional Epithelium**

**Slide Organ: Urinary Bladder**

**1-Basal Short Columnar Cell Layer**

**2-Middle Cuboidal Cell Layer**

**3-Superficial Large Cuboidal (*With Convex Free Surface And May Be Binucleated Layer*)**



## Practice 5 : Epithelial Tissue II: Glandular Epithelium

Organ: Submandibular Gland .Exocrine (Compound Acinus) Gland

1-Serous Acini *pyramidal in shape*

2-Mucus Acini

Acini

3-Mixed Acini



4-Interlobular Septa

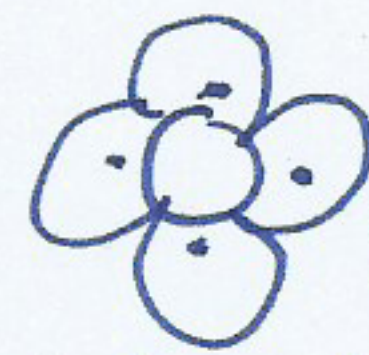
||| (C.T)

5- Interlobular Duct

" clear space / regular space

6-Intralobular Duct

7-Intercalated Duct



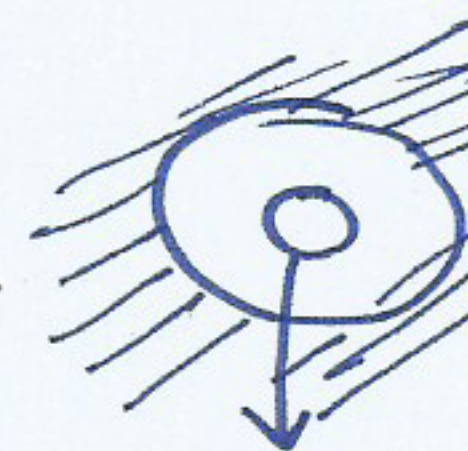
intercalated

بين الأسناني وامتفر



intralobular

تفرعة



interlobular

white regular clear lumen (duct)

can be rounded or not irregular

- cytoplasm of duct reddish and clear.

- " " " at serous granular, basophil.



honey

Adipose



## **Practice 6: Connective Tissue Proper (Loose, Dense)**

### **Loose Areolar Connective Tissue**

**Slide Organ: Small Intestine**

**1-Areolar C.T.**

**2-Nucleus Of Cell Of C.T**

**3-Collagenous Fibers**

**4-Blood Vessels**

**5-Fat Cells**

### **Dense Irregular Connective Tissue**

**Slide Organ: Skin**

**1-Collagen Fibers**

**2-Fibroblast Cells**

### **Dense Regular Connective Tissue**

**Slide OF Tendon**

**1-Dense Regular Connective Tissue**

**2-Collagen Fibers**

**3-Tendon Cells (Fibroblast)**



## **Practice 7: Connective Tissue Specialized; Cartilage**

### **Hyaline Cartilage**

**Organ: Trachea**

- 1-Mature Cartilage**
- 2-Perichondrium**
- 3-Internal Chondrogenic Layer**
- 4-External Fibrous Layer**
- 5- Cell Nest**
- 6- Cartilage Lacuna**
- 7- Chondrocyte In Lacuna (Nuclei Of Chondrocyte)**
- 8-Capsule**
- 8- Territorial Matrix**
- 9-Interterritorial (Interstitial) Matrix**

### **Elastic Cartilage**

**Slide Organ: Pinna Of The Ear**

- 1-Perichondrium**
- 2- Cell Nest**
- 3- Chondrocyte ( Nucleus Of Chondrocyte)**
- 4-Elastic Fibers**

### **Fibrocartilage**

**Slide Organ :Inter Vertebral Disk**

- 1-Dense Irregular Collagen Fibers**
- 2- Chondrocyte In Lacunae**



## **Practice 8: Connective Tissue Specialized; Bone (Osseous Tissue)**

### **Compact Bone**

**Organ: Diaphysis Of Long Bone**

**1-Haversian System**

**2-Haversian Canal**

**3-Volkman's Canal**

**4-Concentric Lamellae**

**5-Interstitial Lamellae**

**6-Outer Circumferential Lamella**

**7-Inner Circumferential Lamella**

**8-Bone Lacunae**

**9-Osteocyte In Lacunae**

**10- Canaliculi Across Lamellae**



## Practice 9: Connective Tissue Specialized; Blood Tissue

**1-RBCs: Red Blood Cell (ERYTHROCYTES) Approximately**  
**= $3.9-5.5 \times 10^6/\mu\text{L}$  in women &  $4.1-6 \times 10^6/\mu\text{L}$  in men.**

**2-WBCs: White Blood Cells (LEUKOCYTES) = 4000-8000/ $\mu\text{L}$**

**A-Neutrophils**

**B- Lymphocytes**

**C- Monocytes**

**D- Eosinophils**

**E- Basophils**

### 1-Granular leukocytes

**1- Neutrophils 60-75 %**

**2- Eosinophils 2-4 %**

**3- Basophils 0- 0.5 %**

### 2-Non-granular leukocytes

**1- Lymphocytes 20-40 %**

**2- monocytes 3- 8 %**

**3- Blood Platelets (THROMBOCYTES) =150,000-400,000 / $\mu\text{L}$**



## Practice10: Muscle Tissue

### Smooth Muscle

**Slide Organ: Jejunum**

- 1-Muscle Fibers (Longitudinal Section)**
- 2-Muscle Fibers (Transversal Section)**
- 3-Nucleus Of Muscle Fibers**
- 4-Connective Tissue**
- 5-Blood Vessels**

### Striated Muscle ;Skeletal Muscle

**Organ: Tounge**

- 1- Striated Muscle Fibers (Longitudinal Section)**
- 2- Striated Muscle Fibers (Transversal Section)**
- 3- Connective Tissue { Epimysium, Perimysium,Endomysium}**
- 5-Nucleus Of Muscle Fibers**
- 6- Nucleus Of C.T Cells(Fibroblast)**
- 7- Striation Of Muscle Fiber A Band(Dark)& I Band(Light)**

### Striated Muscle ;Cardiac Muscle

- 1-Cardiac Muscle (Longitudinal Section)**
- 2-Cardiac Fiber Or Cell (Transversal Section)**
- 3-Cardiac Nucleus**
- 4-Cardiac Striation**
- 5-Intercalated Disk**



**Practice11: Nervous Tissue****Peripheral Nervous System****Slide Organ: Peripheral Nerve****1-Nerve Fibers****2-Neurokeratin,Myeline****3-Nucleus Of Schwann****4-Node Of Ranvier****5- Connective Tissue {Endoneurium,Perineurium}****6-Nucleus Of Fibroblast****Central Nervous System****Slide Organ: Spinal Cord (Gray Matter & White Matter)****1-Neuron****2-Perikaryon(Cell Body Or Soma)Of Neuron****3-Nucleus Of Neuron****4- Dendrites****5- Axon (Myelinated Axon In White Matter)**

***{Wish You Best Of Luck From All Stuff  
Members Of Histology Unit}***

